MAP I-1420 (NI-16)

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

QUATERNARY GEOLOGIC MAP OF THE LOOKOUT MOUNTAIN 4° × 6° QUADRANGLE, UNITED STATES

State compilations by Robert A. Miller, Stuart W. Maher, Charles W. Copeland, Jr., Katherine F. Rheams, Thornton LeNeathery, William A. Gilliland, Michael S. Friddell, Arnie K. Van Nostrand, Walter H. Wheeler, Drew F. Holbrook, and William V. Bush
Edited and integrated by Gerald M. Richmond and David S. Fullerton

QUATERNARY GEOLOGIC ATLAS OF THE UNITED STATES

Prepared in cooperation with the
GEOLOGICAL SURVEY OF ALABAMA
TENNESSEE DIVISION OF GEOLOGY
GEORGIA GEOLOGICAL SURVEY
MISSISSIPPI GEOLOGICAL SURVEY
DEPARTMENT OF GEOLOGY, UNIVERSITY OF NORTH CAROLINA, AND
ARKANSAS GEOLOGICAL COMMISSION

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MILLER AND OTHERS—QUATERNARY GEOLOGY, LOOKOUT MOUNTAIN 4° × 6° QUAD., U.S. 1:1,000,000 MAP I-1420 (NI-16)

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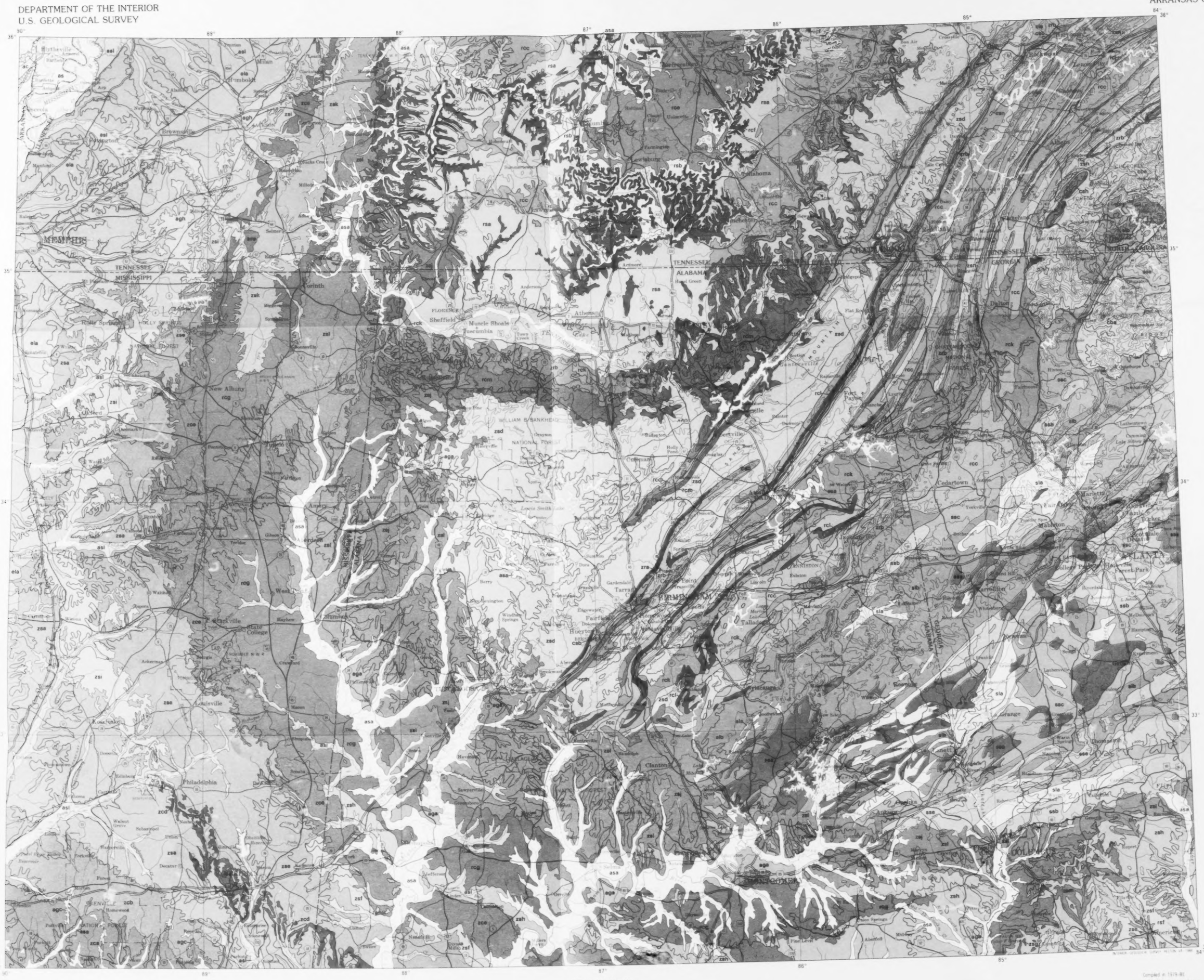
MEMPIS
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
Corinth
Sheffield
Muscle Shoals
Tuscumbia
Florence
Athens
Decatur
Huntsville
Cleveland
Dalton
Rome
Gadsden
Anniston
Talladega
Birmingham
Fayetteville
Cedartown
La Grange
Columbus
Montgomery
Atlanta
Marietta
Milan
Humboldt
Brownsville
Jackson
Selmer
Ripley
Ashland
Holly Springs
New Albany
Oxford
Pontotoc
Tupelo
Amory
Aberdeen
Starkville
West Point
Columbus
Kirkville
State College
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Philadelphia
Meridian
Tuscaloosa
Jasper
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Piedmont
Anniston
Oxford
Talladega
Sylacauga
Alexander City
Opelika
Auburn
Tuskegee
Eufaula
Dothan
Abbeville
Thomasville
Tallahassee
Quitman
Valdosta
Moultrie
Albany
Cordele
Americus
Fitzgerald
Tifton
Douglas
Waycross
Brunswick
Savannah
Statesboro
Swainsboro
Vidalia
Lyons
Metter
Claxton
Hinesville
Darien
Jesup
Waycross
Folkston
Homerville
Nahunta
Blackshear
Baxley
Hazlehurst
Jesup
Douglas
Alma
Nicholls
Pearson
Willacoochee
Ambrose
Fitzgerald
Ocilla
Irwinville
Sycamore
Tifton
Ashburn
Sylvester
Camilla
Arlington
Colquitt
Bainbridge
Donalsonville
Cairo
Thomasville
Boston
Meigs
Pelham
Ochlocknee
Sparks
Adel
Nashville
Berrien Springs
Lakeland
Valdosta
Hahira
Lake Park
Quitman
Morven
Barwick
Pavo
Whigham
Thomasville
Cairo
Bainbridge
Donalsonville
Attapulgus
Climax
Bainbridge
Chattahoochee
Sneads
Quincy
Havana
Midway
Tallahassee
Monticello
Greenville
Madison
Perry
Lloyd
Monticello
Jefferson
Lamont
Greenville
Madison
Perry
Lloyd
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Jefferson
Lamont
Tallahassee
Quincy
Havana
Midway
Chattahoochee
Sneads
Marianna
Grand Ridge
Sneads
Graceville
Chipley
Bonifay
Caryville
Vernon
Chipley
Bonifay
Caryville
Vernon
Panama City
Apalachicola
Carrabelle
Eastpoint
Port St. Joe
Wewahitchka

Differences in mapping or interpretation in different areas were resolved by correspondence to the extent possible. Most simply reflect differences in available information or differences in philosophies of mapping. Such differences serve to encourage further investigation.

Less than forty percent of the surficial deposits of the United States have been mapped and described. Traditionally, mapping of surficial deposits has been focused on glacial, alluvial, eolian, lacustrine, marine, and landslide deposits. Slope and upland deposits have been mapped in detail only in restricted areas. However, an enormous amount of engineering construction and many important problems of land use and land management are associated with regions that have extensive slope and upland deposits (colluvium, residuum, and saprolite, for example). These materials have many different physical characteristics. Therefore, an effort has been made to classify, map and describe these deposits, based in large part on unpublished interpretations of individuals, published and unpublished subsoil data, and the distribution of bedrock parent materials. The classification is crude, but represents a first step toward a more refined and useful product.

For scientific purposes, the map differentiates Quaternary surficial deposits on the basis of a combination of criteria, such as lithology, texture, genesis, stratigraphic relationships, and age, as shown on the correlation diagram and indicated in the map unit descriptions. Geomorphic features, such as stream terraces, are not distinguished, as map units, and differentiation of sequences of alluvial deposits of different ages is rarely possible at a scale of 1:1,000,000. Most landslide deposits also are too small to be shown at this scale

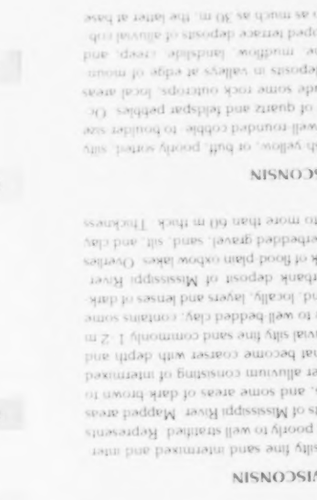
For practical purposes, the map is a surficial materials map, on which materials are distinguished on the basis of texture, composition, and local specific characteristics, such as swelling clay. It is not a map of soils as soils are recognized and classified in pedology or agronomy. Rather it is a generalized map of soils as recognized in engineering geology, or of subsoils or parent materials from which pedologic or agronomic soils are formed. As a materials map it serves as a base from which a wide variety of derivative maps for use in planning engineering, land use, or land management projects can be compiled

CONTACT

MARGIN OF FLOOD PLAIN OF MISSISSIPPI RIVER

NOTE. This map is the product of collaboration of State geological surveys, universities, and the U.S. Geological Survey, and is designed for both scientific and practical purposes. It was prepared in two stages. First, separate maps and map explanations of the parts of States included in the quadrangle were prepared by the State compilers. Second, these maps were combined, integrated, locally supplemented, and related to a uniform map symbol classification by the editors. The map unit descriptions also were combined, supplemented, and coordinated with those of other maps of this series so that individual unit descriptions are applicable throughout both this map and all other maps of the series. The footnote on saprolite was prepared by E. T. Cleaves, Maryland Geological Survey, and R. B. Daniels, North Carolina State University. Diagrams accompanying the map were prepared by the editors

	DESCRIPTION OF MAP UNITS
	HOLOCENE
asa	ALLUVIAL GRAVELLY SAND—Light-gray, yellowish-gray, or brownish gray, coarse to fine sand and subangular to well rounded pebble to cobble gravel; reddish orange to reddish-brown in parts of Tennessee, Georgia, and Alabama. Poorly to well-sorted; poorly to well stratified; locally clayey. Interbedded lenses of gravel along Tennessee River in Tennessee. Gravel component sparse in Mississippi. Deposits include varying amounts of interbedded or admixed silt and clay, especially in flood plains along lower parts of regional drainage in Georgia and Alabama and along Tennessee River in Tennessee. Gravel in Tennessee, Mississippi, and western Alabama is chiefly chert and minor amounts of quartz. Gravel in central and eastern Alabama and in Georgia is chiefly quartz. Clay balls and lenses, commonly kaolinic, occur locally in deposits in Georgia. Mapped areas include organic muck and swamp deposits on flood plains, and local colluvium along margins or valley floors. Thickness generally 5–10 m
asl	ALLUVIAL SILT AND SAND—Grayish-tan to brown, locally clayey, silt and fine to very fine quartz sand; poorly sorted; irregularly bedded. Some interbedded or intermixed chert pebble gravel, especially in eastern headwaters. In Tennessee and northern Mississippi, silt derived mainly from older colluvium and alluvium composed chiefly of loess. In eastern Mississippi, deposit derived from local residuum and is more clayey. Mapped areas include organic muck and swamp deposits of flood plains. Thickness 3–8 m
	HOLOCENE AND LATE WISCONSIN
as	ALLUVIAL SILTY FINE SAND—Gray to brown, silty fine sand interbedded and interbedded with silt and clay. Poorly to well sorted; poorly to well stratified. Represents channel meander and, locally, overbank deposits of Mississippi River. Mapped areas include swamp deposits, muck of oxbow lakes, and some areas of dark-brown to black organic clay on flood plain. Overlies older alluvium consisting of intermixed and interbedded gravel, sand, silt, and clay that become coarser with depth and is 10 m to more than 60 m thick. Thickness of alluvial silty fine sand commonly 1–2 m
ac	ALLUVIAL CLAY—Gray to reddish brown, poorly to well bedded clay; contains some interbedded fine sand and silt and, locally, layers and lenses of dark-brown to black organic clay. Unit is an overbank deposit of Mississippi River. Mapped areas include swamp deposits and muck of flood plain oxbow lakes. Overlies older alluvium consisting of intermixed and interbedded gravel, sand, silt, and clay that becomes coarser with depth and is 10 m to more than 60 m thick. Thickness commonly 1–2 m
	HOLOCENE AND WISCONSIN
cba	BOULDERY COLLUVIUM—Grayish yellow, bluish yellow, or buff, poorly sorted, silty sandy loam to sandy clay; contains numerous well-rounded cobble- to boulder-size clasts of hard conglomerate composed chiefly of quartz and feldspar pebbles. Occurs on mountain slopes. Mapped areas include some rock outcrops, local areas of saprolite (**ssa**), and bouldery alluvial fan deposits in valleys at edge of mountains. Chiefly the product of debris avalanche, mudflow, landslide, creep, and possibly solifluction, in places it overlies unmapped terrace deposits of alluvial cobble gravel. Thickness ranges from about 2 m to as much as 30 m, the latter at base of slopes
csb	COLLUVIUM WITH HUGE BLOCKS—Light gray to pale yellowish brown, poorly sorted, sandy, silty clay loam; contains chips of siltstone and shale and angular sandy to pale orange, yellowish-orange, reddish-orange, or brick-red, clayey fine to medium sand; locally contains some subrounded fine gravel, and very fine to fine sandy, silty clay. Sand and gravel chiefly quartz. Mapped areas include some locally derived colluvium, alluvium, and bedrock outcrops. Thickness less than 1 m to about 3 m
csh	SANDY SHALY COLLUVIUM—Gray, bluish gray, or greenish gray, weathered sandy loam, locally clayey or silty; contains abundant chips of shale, particles of clay and small fragments of sandstone. Boulders lacking. Sand mostly quartz. Present only locally on northward slopes of foothills in Tennessee in northeast part of map area. Thickness generally less than 15 m
csl	SANDSTONE AND SHALE CLAST LOAMY COLLUVIUM—Light gray, brownish gray, or yellowish brown, poorly sorted, sandy loam to clay loam; contains angular to subround, commonly shaly, pebble- to boulder-size clasts of sandstone and chips of shale. Present in northeastern northeastern part of map area in Tennessee. Locally overlies residuum (**zsd**). Deposit tends to be unstable on steep slopes and where clayey. Thickness less than 2 m to 7 m
	WISCONSIN AND ILLINOIAN
cla	COLLUVIAL AND ALLUVIAL LOESS (In part stratigraphically equivalent to the Peoria Loess and Roxana Silt of Illinois and, in places, to the Loveland Loess of Iowa)—Grayish brown to yellowish brown, locally light reddish brown, silt loam; massive to bedded. Unmapped loess extends east of map unit limit as thin, patchy deposits commonly mixed with locally derived colluvial, residual, or alluvial deposits. Thickness ranges from 3 m at eastern limit of map unit to maximum of 30 m along Mississippi River
	LATE PLEISTOCENE TO LATE PLIOCENE
qla	COLLUVIAL AND ALLUVIAL LOESS
qga	ALLUVIAL QUARTZ-PEBBLE GRAVEL AND SAND
qgb	ALLUVIAL CHERT-PEBBLE GRAVEL AND SAND
	EARLY PLEISTOCENE(?) TO MIDDLE PLIOCENE
qgc	ALLUVIAL PEBBLE GRAVEL AND SAND (CITRONELLE FORMATION)
	PLEISTOCENE, PLIOCENE, AND MIOCENE(?)
qgh	UPLAND CHERT PEBBLE GRAVEL AND SAND
	QUATERNARY AND OLDER CENOZOIC
zss	LIMONITIC SANDY DECOMPOSITION RESIDUUM
zsd	SANDY DECOMPOSITION RESIDUUM
zse	CLAYEY FINE TO MEDIUM SAND DECOMPOSITION RESIDUUM
zsf	MEDIUM TO COARSE SAND AND SANDY CLAY DECOMPOSITION RESIDUUM
zsg	SANDY CLAY AND FERRUGINOUS CLAYEY COARSE SAND DECOMPOSITION RESIDUUM
zsh	SILTY MEDIUM TO FINE SAND AND SANDY CLAY DECOMPOSITION RESIDUUM
zsi	CLAYEY FINE SAND DECOMPOSITION RESIDUUM
zsj	CHERT GRAVEL AND SAND DECOMPOSITION RESIDUUM
zsk	FERRUGINOUS SAND DECOMPOSITION RESIDUUM
zsl	MEDIUM TO COARSE SAND DECOMPOSITION RESIDUUM
zsm	CLAYEY SILT AND VERY FINE SAND DECOMPOSITION RESIDUUM
zsn	SANDY SHALY DECOMPOSITION RESIDUUM
zso	SANDY CLAY DECOMPOSITION RESIDUUM
zsp	SMECTITIC CLAY DECOMPOSITION RESIDUUM
zsq	SILICEOUS CLAY DECOMPOSITION RESIDUUM
zsr	MASSIVE CLAY DECOMPOSITION RESIDUUM
zss	SILTY SANDY DECOMPOSITION RESIDUUM AND CHERTY CLAY SOLUTION RESIDUUM, UNDIFFERENTIATED
zrb	CHERTY CLAY SOLUTION RESIDUUM, SANDY CLAY DECOMPOSITION RESIDUUM, AND SILTY CLAY DECOMPOSITION RESIDUUM, UNDIFFERENTIATED
rsa	CHERT FRAGMENT SOLUTION RESIDUUM
rsb	PHOSPHATIC SANDY SOLUTION RESIDUUM
rsf	CLAYEY SAND SOLUTION RESIDUUM WITH CHERT CLASTS
rcc	CHERTY CLAY SOLUTION RESIDUUM
rce	THIN CLAYEY SOLUTION RESIDUUM
rcf	CHERTY SILTY CLAY, LOCALLY PHOSPHATIC, SOLUTION RESIDUUM
rcg	DARK-GRAY CLAY SOLUTION RESIDUUM
rcj	RED CLAY SOLUTION RESIDUUM
rck	CLAYEY SAND TO SANDY CLAY SOLUTION RESIDUUM
rcl	CHERTY SILTY CLAY SOLUTION RESIDUUM
rcm	PLASTIC CLAY SOLUTION RESIDUUM WITH COLLUVIAL CHERT
rss	SILTY TO CLAYEY SANDY SAPROLITE, ROCK TORS, AND JOINT-BLOCK BOULDERS
ssb	SILTY TO CLAYEY SANDY SAPROLITE
ssc	MICACEOUS, CLAYEY, AND SANDY SAPROLITE, UNDIFFERENTIATED
sse	QUARTZ-RICH SAPROLITE
ssi	ARGILLACEOUS SAPROLITE
ssk	MICACEOUS SAPROLITE



LIST OF MAP UNITS

HOLOCENE

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asl ALLUVIAL SILT AND SAND

HOLOCENE AND LATE WISCONSIN

as ALLUVIAL SILTY FINE SAND
ac ALLUVIAL CLAY

HOLOCENE AND WISCONSIN

cba BOULDERY COLLUVIUM
csb COLLUVIUM WITH HUGE BLOCKS
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zsj CHERT GRAVEL AND SAND DECOMPOSITION RESIDUUM
zsk FERRUGINOUS SAND DECOMPOSITION RESIDUUM
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zsm CLAYEY SILT AND VERY FINE SAND DECOMPOSITION RESIDUUM
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CORRELATION OF MAP UNITS
ALLUVIAL DEPOSITS
COLLUVIAL DEPOSITS
LOESS
SOLUTION RESIDUAL DEPOSITS
DECOMPOSITION RESIDUAL DEPOSITS
SAPROLITES
Holocene
Late Wisconsin
Early Wisconsin
Pleistocene
Pre-Wisconsin
Pliocene and older
TERTIARY AND OLDER CENOZOIC
asa
ast
as
ac
cba
cbb
cbh
cb
ca
ngh
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